

NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE STANDARD

Stream Channel Stabilization (FT) No. 584

Definition

Stabilizing the channel of a stream with suitable structures.

Purpose

To control aggradation or degradation in a stream channel. It does not include work done to prevent bank cutting or meander.

Conditions where Practice Applies

This practice applies to stream channels undergoing damaging aggradation or degradation that cannot be feasibly controlled by clearing or snagging, by the establishment of vegetative protection, or by the installation of upstream water control facilities.

Federal, State, and Local Laws¹

Design and construction activities shall comply with all federal, state, and local laws, rules, and regulations governing pollution abatement, health, and safety. The owner or operator shall be responsible for securing all required permits or approvals and for performing in accordance with such laws and regulations. NRCS employees are not to assume responsibility for procuring these permits, rights, or approvals, or for enforcing laws and regulations. NRCS may provide the landowner or operator with technical information needed to obtain the required rights or approvals to construct, operate, and maintain the practice.

Permits may be required from the following agencies:

1. ***West Virginia Department of Health***

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2. ***West Virginia Department of Agriculture***

Planning Considerations

Water Quantity

1. Stage-discharge and flow velocity relative to the water budget components, geologic materials comprising the stream channel, and objectives of the channel modification.

2. Effects on water tables, soil moisture storage, and rooting depths and transpiration of vegetation.

Water Quality

1. Temporary and long-term effects on erosion and sedimentation.

2. Changes in stream water temperature that may result from the clearing of vegetation or alteration of water sources to the channel.

3. Effects on the visual quality of the water resource.

Design Criteria

It is recognized that channels may aggrade or degrade during a given storm or over short periods. A channel is considered stable if over long periods the channel bottom remains essentially at the same elevation.

In the design of a channel for stability, consideration shall be given to the following points:

1. The character of the materials comprising the channel bottom and sides.
2. The quantity and character of the sediments entering the reach of channel under consideration. This shall be analyzed on the

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basis of both present conditions and projected changes caused by changes in land use or land treatment and upstream improvements or structural measures.

3. Streamflow peaks, velocities, and volumes at various flow frequencies.

4. The effects of changes in velocity of the stream produced by the structural measures.

Structures installed to stabilize stream channels shall be designed and installed to meet NRCS standards for the particular structure and type of construction.

The minimum capacity shall be that required to confine the peak runoff expected from a 10-year, 24 hour storm. The size and capacity of stabilizing structures shall be equal to the design stream capacity with provisions made to include some freeboard.

The structural design and quality of materials and construction shall have a life expectancy consistent with the design frequency but in no case less than 10 years.

The structural design shall be based upon local site conditions, configuration of the channel, velocity changes and turbulence created by the structure. Approaches and exits to structures shall be designed to prevent erosion and resultant undermining or bypassing of stream flow.

Plans and Specifications

Plans and specifications for stream channel stabilization shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

Specifications may be developed from NEH-20 Series, 700 Series, or other material, as appropriate.

Measures and installation methods that enhance fish and wildlife values shall be incorporated as needed and practical. Special attention shall be given to protecting and maintaining key shade, food, and den trees and to stabilizing disturbed areas.

Trees and brush shall be removed in a manner that prevents damage to other trees and property.

Trees, brush, and other materials shall be disposed of in a manner that insures the least detrimental effect on the environment.

Construction operations shall be carried out in such a manner that erosion and air and water pollution are minimized and held within legal limits.

The completed job shall present a workmanlike finish.

Operation and Maintenance

An operation and maintenance plan shall be developed for the structure. The plan shall outline the minimum maintenance necessary to ensure the structure functions for its design life.

As a minimum, the plan shall address the following:

1. Annual inspections and inspections after each major storm occurrence to assess the need for repair.

2. Removal of debris accumulations, and sediment deposits.

3. Repair of damaged structures.

4. Repair of eroded areas that might endanger the structure or contribute to instability of the stream.

¹***Bold italics is information added to the National standard by West Virginia.***